THE ZOOLOGIST

No. 677.—November, 1897.

DESCRIPTION OF, AND NATURAL HISTORY NOTES ON, THE BURMESE WILD BULL.

By Henry S. Wood,
Surgeon-Captain, 44th Gurkhas.

Bos sondaicus is found in some parts of Burmah, and also in Sumatra and Java. It occurs in great numbers in the huge forests and grass-lands which lie between the Manipur and Burmese territories, that is, in the Kubbo-Kalé valley; and my observations have all been taken from specimens which I have obtained there. In my various hunting trips I have only managed to bag three of these animals, one being a magnificent Bull, whose description and measurements I give in detail. Although plentiful, these animals are so shy and their senses of sight, smell, and hearing so acute, that they are very difficult to approach. The Burmese name for *Bos sondaicus* is "Tsoing' or "Tsine"; Manipuri, "Lumsun Angangha"; in Java it is known as the "Banting." It would be interesting to know whether the animals found in Java and Burmah are identical in all details of colouring, &c. This animal is a handsome beast, and is much dreaded by the Burmese, who seldom hunt it. The hill tribes, however, trap the animal in pit-falls, and sometimes shoot it with arrows poisoned with aconite. A wounded Tsine will charge viciously; and the only way to escape from it when unarmed is to lie flat on the ground. It strikes with its feet as well as with its horns, and can inflict serious wounds, the tips of the horns being very sharp and, in Bulls, curved backwards. There is also this tendency of the horns to curve backwards in old Cows. The colouring of an adult Bull and adult Cow are so unlike that at first one would think they were different species. A separate description of each may, therefore, be useful. These animals are found in herds varying from ten to thirty in number; and in the large herds there are generally found two or three small Bulls whose heads are not worth obtaining. The largest horns, as is the case in other bovine animals, are found in solitary Bulls who keep to themselves, and only occasionally mix with the Cows during the breeding season. When the green grass sprouts up, after the yearly fires, the old Bulls wander over large areas, and seldom remain in the same locality for two successive days; while, like the Bison, they are almost always on the move, feeding as they go along, and only lying down during the day when the sun is hottest. The Tsine can go for days without water, and the Burmese say that they only drink once in seven days. I have come across herds in absolutely dry districts, miles away from water. Another peculiarity of the Tsine is that it does not seem to mind the bites of the Gad or Horsefly, with which the teak forests abound at the beginning of the monsoon. The wild Buffalo, which has apparently a much tougher skin, is almost driven mad by these pests, and is compelled to take to the rivers and swamps to avoid them; whereas the Tsine will never resort to the water, but prefers to lie down in the forest surrounded by these buzzing tormentors, when no doubt its long and bushy tail assists in driving off the blood-suckers. During the rains these animals betake themselves to the low hills, where they feed on the bamboo, with which the hills are covered; and after the yearly fires they all descend into the valley, and wander through the vast teak forests. Unlike the Bison, they never come down to the rice fields of the villagers, and this is probably owing to their extreme shyness. The Cow calves during the rains, and the young is of a light red colour, only one being produced at a birth. At the beginning of the rains Tsine are always to be found at the foot of the low hills, where they browse on the tender new bamboo shoots. These animals also travel great distances to visit the so-called "salt licks," one or two of which

BRITISH MUSEUM

are generally found in places where the species is obtained, though many of these "salt licks" are nothing more than a mixture of mud and water which has a slightly saline taste. These "salt licks" are also visited by hundreds of Parrots, Green and Imperial Pigeons; and also by Elephants, Bisons, Pigs, and Sambar. The Tsine is often shot at these places by the hunter, who squats up in a tree close by. Bison and Tsine are never met together in a herd, although I have found both beasts within the radius of a mile of each other. The spoor of the Tsine is heart-shaped, and very pointed anteriorly, quite unlike the track of a Bison: this is owing to the hoofs of the former being much more pointed and Deer-like. These animals, either when feeding or lying down, always have a sentry, generally a Cow. When lying down they generally rest in a circle; and when the sentry suspects danger she either stamps her foot or gets up; and with a "psheu" and a snort the whole herd stampede with their tails in the air. Thus alarmed they go miles before stopping, and it is useless pursuing them under such circumstances. They are always in good condition, although at times subject to cattle disease. All specimens which I have shot had splendid coats, smooth and shining, like that of a well-groomed horse. The skin is much prized by the Burmans for making shoes. The under parts of the body in one Cow were covered with small warts, varying in size from that of a pea to a hazel-nut. The neck of the Bull is generally covered with scars, the result of wounds received in combat. The genital organs, too, in the Bull, are covered with huge ticks. In the paunch of this animal, mixed up with the grass, I have seen hundreds of a peculiar looking parasite, which in some cases are in such numbers that the stomach seems to be lined with them. These parasites are bladder-shaped, one-fourth of an inch long, and are of two kinds—one red, and the other white; they seem to adhere to the villi of the stomach, and feed on the blood or its serum; each has a distinct sucker like a leech, but they die very soon after exposure to the air. I have seen the same parasite in the stomachs of other animals, Sambar, &c.; but notably in the Tsine and Eld's Deer, *Cervus eldi*. These parasites do not seem to affect the animal's health, as they were always well conditioned, sleek, and fat. The human stomach is also said to be infected by this peculiar parasite, but I have never seen a case.

DESCRIPTION AND DETAILS OF BULL TSOING.

The general colour of this Bull was of a light red, fading and becoming lighter as the flanks and under surface of the body were approached; here the colour was almost greyish, intermixed here and there with white; the inside of the thighs was of a yellowish grey, where the skin was almost devoid of hair, and here also secretes an unctuous brown substance resembling the wax of the ear. The inside of the fore legs and under parts of the chest were of a greyish white, and the anterior portion of the fore leg from the knee upwards of a reddish black colour; this tint is also slightly marked in the hind legs. There was just a vestige of a dewlap, this being about three inches in its greatest breadth.

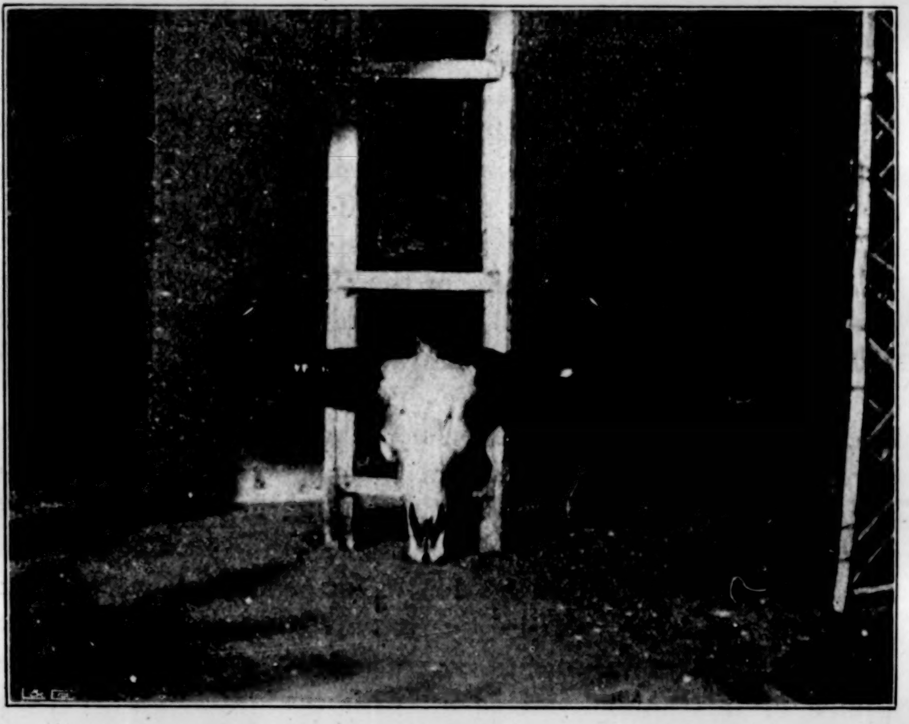


FIG. 1.—SKULL AND HORNS: BULL TSOING. Length of left horn, 33½ in. Length of right horn, 31 in. Girth of left horn, 17 in. Girth of right horn, 16 in.

Under surface of the chest a lightish yellow colour, intermixed with grey. The hair of the skin was short and glossy in the redder parts, but coarse and thick in the grey parts; on the belly the skin was about half an inch thick, but nearly one inch thick on the neck; the surface of the body pitted and scarred here and there from bites of insects and wounds received in battle; there were four rudimentary mammæ, half an inch in length, situated in front of the scrotum, two on each side of the mesial line, and of a saffron colour. The scrotum was covered with a fine silky greyish hair. The upper part of the head anteriorly and at the sides was of a tawny white; the under parts were much lighter, being almost grey; the muzzle greyish black; the neck reddish brown. Lips greyish white, covered with black bristles; and the lower lip had a fringe of long grey hairs projecting from its under surface. The tail has a distinct reddish brown tuft. The ears are comparatively small, when compared with those of the Cow: upper parts of ears reddish brown, posteriorly greyish white, tips and anterior edges jet black; greyish white hairs of considerable length projecting inwards from the anterior border; the interior of the auricle is of a saffron colour; the left ear was split in four places, the largest being six inches in length; colour round eyes greyish white, eyelashes black; fleshy parts of nose also black. Eyes: irides brown; cornea bluish white. The incisors of the lower jaw were loose and considerably worn down, showing that the Bull was probably an old one, perhaps twenty years of age. There was a most curious condition at the upper part of the head over the frontal region, where, instead of a skin covered with hair, there was a thickened portion of skin devoid of hair, and of a greyish black colour; its general surface was smooth, but in patches very warty like the skin of a Rhinoceros. This curious portion of skin extended like a chaplet over the head; the area it occupied would be represented in the dry skull by lines drawn between the upper parts of the orbit and between the bases of horns at the top of the skull; between the horns this cuticle formed a distinct projection or crest; this covering was soft on pressure and slightly moveable. This skin evidently forms a most excellent cushion for breaking the shock of any concussion on the forehead, *e.g.* as in fighting. The reason of its being present in the Tsine is that the bones of the skull are much thinner and less massive than those of the Bison or Buffalo; it is merely a protection to the brain. This skin on dissection was found to be more than two inches thick, and very adherent to the bone; the horns, too, are evidently secreted from the outer part of this cuticle. There is a distinct dorsal ridge, which ends abruptly about the middle of the back, but no distinct hump.

The above description is taken from a Bull which I shot at Tammu, N.E. Frontier, on the 28th of June, 1896.

Measurements as follows:—

		FT.	IN.
Height at shoulders	15 hands		
Length (nose to tip of tail over back)		14	0
Length (nose to tip of tail across body)		11	9
Length of head and neck (above)		3	10
Length of head and neck (below)		3	0
Length of tail		2	11
Length of ears		0	10
Girth (middle of body)		7	10
Girth (chest)		7	0
Girth of fore leg above knee		0	15
Girth of hind leg above hock		1	6
Girth of neck (middle)		3	10
Girth of haunch		1	11

SKULL AND HORNS.

Length of skull anteriorly	1	11½	
Distance between orbits	1	2	
Breadth of forehead (between horns)	0	10	
Length of left horn (base to tip round curve)	0	33½	*
Length of right horn (base to tip round curve)	0	31	
Girth of right horn (base)	0	16	
Girth of left horn (base)	0	17	
Distance between tips	0	26⅞	
Distance between convexities	0	38½	

HEAD.

Girth round muzzle	2	1
Length of eye-slit	0	3
Length of nares	0	2¾
Girth of head (above eyes)	3	4½

FEET AND LEGS.

Length of fore leg (hoof to knee)	1	6
Length of hind leg (hoof to hock)	1	10
Length of hoof, fore foot (under surface)	0	6
Length of hoof, hind foot (under surface)	0	5
Breadth of hoof, fore foot	0	4
Breadth of hoof, hind foot	0	4

---

* Measured before—J. R. Melluse, Lieut.; G. Warneford, Lieut.; H. S. Wood, Surg.-Capt.

The section of a horn represents more an oval than a cylinder. The general colour of the horns is of a semi-transparent green, except the tips, which are jet black for about six inches, and the bases, which are very rough, irregular, gnarled, ringed, and rugged, and also black in colour. The horns gradually taper to a very sharp point; their direction being—(1) backwards and outwards; (2) forwards and upwards; (3) backwards, the tips looking almost directly back.

DESCRIPTION AND DETAILS OF COW TSOING.

The description is taken from a Cow which I shot at Tammu (Kubo-Kalé Valley) on the 28th of June, 1896. It was an extremely handsome, well-bred looking beast, in appearance half Antelope, half Cow.

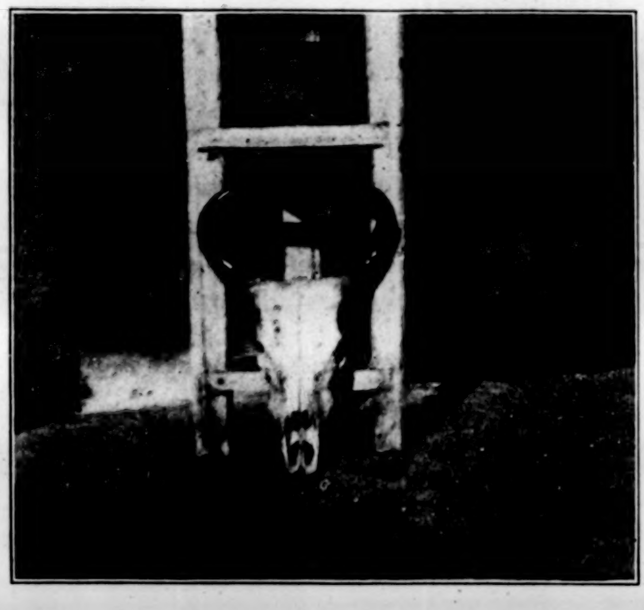


FIG. 2.—SKULL AND HORNS: COW TSOING. Length of left horn, 15 in. Length of right horn, 15½ in. Girth of left horn, 7½ in. Girth of right horn, 7½ in.

The general colour was light red, but as the upper parts near the back and buttocks were approached the red became darker, being almost a reddish brown. As the under parts were reached the red colouring became fainter and fainter, gradually merging into white. The inside of fore legs and hind legs as also the belly were of a whitish colour; this was also noticeable on the under surface of the neck and on the lower jaw. The fore legs and hind legs for about four inches above the knee and hock respectively to the fetlock were of a whitish colour. There was a distinct dorsal ridge, which terminated abruptly about the middle of the back, where there was a distinct projection. Two very noticeable features were:—1. A dark black band which passed backwards along the spine from the termination of the dorsal ridge to the root of the tail; this band was about two inches broad at its commencement, but gradually tapered off until it was lost at the root of the tail. 2. A large round white patch on the posterior aspect of each buttock; each patch being a foot in diameter. The upper portions of the head were of a light red colour; the white rings noticed by Col. Pollock round the eyes were not present. The head was very game-like; there was a well-marked reddish black tuft at the end of the tail. The ears were very large, expanded at the extremity, and mobile; they were of a light red colour, the anterior borders being fringed with long greyish white hairs. The lips and muzzle were of a greyish white colour. The hair of the skin was short, smooth, and glossy. The skin close to the mammæ and that of the inside of the ears was destitute of hair, and of a light yellow colour. The great length of the animal was a striking feature.

Measurements of the above were as follows:—

	FT.	IN.
Height at shoulder	3	10
Length (nose to tip of tail over back)	13	7
Length (nose to tip of tail across body)	13	2
Girth round chest	5	9
Girth round belly	6	3
Girth of fore leg (thickest part)	1	6
Girth of hind leg (thickest part)	2	6
Length of head and neck above	2	6
Length of head and neck below	1	7
Girth of middle of neck	2	11
DRIED SKULL.		
Length anteriorly	1	5¾
Distance between orbits	0	7½
Breadth across forehead	0	7
Distance between horns (top of skull)	0	6
HORNS.		
Length of right horn	0	15½
Length of left horn	0	15

	FT.	IN.
Girth of right horn (base)	0	7½
Girth of left horn (base)	0	7½
Distance between tips	0	7½
Distance between convexities	0	16½
Length of the ear	0	11

The colour of the horns was of a semi-transparent blackish green; the colour of the tips for about four inches was of a jet black. On minute examination numerous fine greyish white lines were seen running longitudinally downwards through the dark horny material; posteriorly near the base of the horns the colour was almost yellow. At the bases the horns were distinctly ringed in a regular manner; the horns above these rings were beautifully smooth, and terminated in fine tips. In the fresh specimens, each horn terminated at the base in a bulbous prominence, owing to its being covered by a soft pachydermatous skin devoid of hair, and from which the horn was evidently secreted. The direction of the horns was:—(1) upwards and outwards; (2) inwards; (3) upwards and slightly backwards. In an older Cow which I shot, this backward direction of the horn was well marked; the same tendency—as noted before—occurs in the Bull.

The chief points of difference between the Bull and Cow will be found in the following table:—

Bull.	Cow.
1. Colour dark red; parts, especially about head, greyish white.	1. Colour light red generally; under parts white.
2. No dark line extending from termination of dorsal ridge.	2. Dark line present.
3. Ear short.	3. Ear long, expanded.
4. Length short.	4. Longer in proportion to height.
5. White patches on buttocks posteriorly absent.	5. White patches present.
6. Black colouring on anterior aspect of fore legs present.	6. Black colouring absent.
7. Black tip and anterior edges of ears present.	7. The same absent.
8. Chaplet of thick cuticle over frontal bone present.	8. The same absent.
9. Eyes ordinary.	9. Eyes large and prominent.

A WALK ACROSS LAPLAND.

By H. C. Playne and A. F. R. Wollaston.

Once more again this year the 1st of August saw us on our way northwards, wishing indeed that we could have started three months earlier, but ready to make the most of the only time at our disposal. As we travelled over a considerable extent of country, it will be better not to give a list of all the species of birds we met with, but to write some account of what seemed to us of most interest.

From Trondhjem we went to Hammerfest, through fjords which abound in bird-life; but the deck of a steamer is not a good point of observation, for one is only able to have a passing glimpse of a bird before it is out of sight. Richardson's Skua, *Stercorarius crepidatus*, was abundant, and we had excellent views of many a chase which ended in an unfortunate Tern giving up its prey. Of Buffon's Skua, *S. parasiticus*, with its long tail, we only saw one. We spent a short time on shore at Hammerfest between the hours of midnight and 2 a.m., and though the days of the midnight sun were past, we saw two Dippers, *Cinclus aquaticus*, playing about the stones of a stream at 12.30 a.m. In the afternoon of the same day we landed at the head of the Alten fjord, and began our walk, which was to bring us over the watershed into Finland, and to the northern shore of the Gulf of Bothnia.

Bramblings, *Fringilla montifringilla*, were very numerous among the birch trees, and we could nearly always hear the call-note of *Parus borealis*. This bird has also a song quite unlike any song of *P. palustris* that we had ever heard. The Lapp Tit, *P. cinctus*, was often with his cousin, but he seemed a much more silent bird. These were the only *Paridæ* that we met with until we reached Tervola, half-way between Rovaniemi and Torneå, where a Great Tit, *P. major*, was seen searching a window-frame for insects. On a small lake not far from Alten was a Brent Goosc, *Bernicla brenta*, with five young birds.

On Aug. 6th we climbed above the forest growth, and walked over the open fjeld, where the ground is partly covered with dwarf birch, and there are many lakes and swamps. Here were Redshanks, *Totanus calidris*, and Greenshanks, *T. canescens*, and other waders we were unable to identify. Golden Plovers, *Charadrius pluvialis*, were numerous, and their very melancholy whistle could be heard throughout almost all that country. We had the delight, too, of seeing Dotterels, *Endromias morinellus*, and three young birds in down. Not far from them was a Shore Lark, *Otocorys alpestris*, which seemed rather shy, and ran along the ground in front of us; we saw one more on the next day.

In the evening, at the stooe Suoluobme, a Wood Sandpiper, *Totanus glareola*, was shot. About the farms and hay-huts there was generally a crowd of Snow Buntings, *Plectrophenax nivalis*, so tame that they would run on the ground close to our feet. They were a pleasing substitute for the House Sparrow, a bird we did not see until we were thirty miles south of Kittila. Bluethroats, *Cyanecula suecica*, were very abundant where there were any bushes in damp places. A colony of Sand Martins, *Cotile riparia*, nested in a steep bank of the Alten river.

On a small pool of shallow water at Kautokeino we found three Grey Phalaropes, *Phalaropus fulicarius*, swimming with a buoyancy which was beautiful to see; while at the same time there were standing at the edge of the water a Ringed Plover, *Ægialitis hiaticula*, a Temminck's Stint, *Tringa temmincki*, and a Ruff, *Machetes pugnax*.

At Sieppa, a small Lapp settlement near the Finnish frontier, were hosts of House Martins, *Chelidon urbica*. The Lapps and Finns give these birds a warm welcome, and put up ledges under the eaves of their wooden houses, on which the Martins build their nests as closely together as they can be packed. Round each small farmhouse the birds could be seen in hundreds busily feeding young in the nests. These wooden houses, usually several miles apart, seem to be the only suitable nesting places for House Martins in the country. After leaving Sieppa, just before crossing the watershed, we came upon a flock of Whimbrels, *Numenius phæopus*.

For almost all the rest of the walk we were in forest, and here most noticeable was the absence of the Great Black Woodpecker, *Picus martius*. Last year we saw many of these birds near Rovaniemi, but during this summer, although we passed through a great deal more country, we did not hear or see a single specimen. *Picus major* was abundant, and we on several occasions heard and sometimes had glimpses of a bird which was no doubt *P. minor*. One day, too, between Muonioniska and Kittila, a male Three-toed Woodpecker, *Picoides tridactylis*, flew to a pine tree only a few yards off, and gave us a most excellent view of himself. Frequently, too, in the forest, Siberian Jays, *Perisoreus infaustus*, would come round to inspect us, flying with noiseless flight from tree to tree, and making at times curious though not unmusical sounds.

The country near Muonioniska seems to be much visited by collectors, for we found several of the natives with nests and eggs which they wished to sell. In a large swamp in this district, into which we wandered through losing our path, we saw two Cranes, *Grus communis*, which flew about uttering discordant cries—perhaps it was the swamp in which Wolley found them breeding—and on Aug. 26th, near Tervola, we saw three more of the same species migrating southwards.

We were not fortunate enough to see a flock of Waxwings, *Ampelis garrulus*, again, but as we were following a road near Rovaniemi one bird perched on the top of a pine close to us, and remained there a short time chattering in his curious way.

By the river banks, and in the clearings near the farms, were many Wagtails of three species (*Motacilla alba*, *M. flava*, *Budytes borealis*). A young *M. flava* was shot on Aug. 19th, only twenty-five miles south of Kittila. The Meadow Pipit, *Anthus pratensis*, was very common throughout our walk.

We reached Rovaniemi a week later than last year, and found the river crowded with logs, which seemed to have driven many of the Ducks away. Chiffchaffs, *Phylloscopus collybita*, were there singing again after their moult. On our way southwards from Rovaniemi we saw a Great Grey Shrike, *Lanius excubitor*, very near the place where we saw one last year, but he flew off before we could decide to which of the two races he belonged.

We were especially pleased to make sure of a bird which we unwittingly included in our list last year on rather scanty evidence, because we are told on the best authority that it has not been recorded so far north. On Aug. 25th, between Jankala and Takkunen, about twenty miles south of Rovaniemi, we had a good view of a flock of Siskins, *Chrysomitris spinus*, feeding on the birch trees by the roadside. There was no doubt about them, but in order to have some proof we thought we had better shoot one; however, luckily for the bird, the shot was unsuccessful.

It may be worth recording that on the road between Kemi and Torneå we caught a Common Viper, which moved away sluggishly, but was vicious enough when caught; it was the only Snake we saw. On Aug. 26th we reached Torneå, and brought our walk to an end, for it was necessary to travel home quickly by steamer and rail.

THE INLAND BREEDING OF THE RINGED PLOVER IN NORFOLK AND SUFFOLK.

By W. G. Clarke.

The Ringed Plover is chiefly known to ornithologists as a bird of the sea-shore, where its exceeding rapid movements and inconspicuous colouring render it difficult of observation. By far the greater number nest in such localities, but year by year, even before the return of spring, a small band migrate inland, and on the heaths and warrens of the Norfolk and Suffolk "breck" district undertake domestic responsibilities. It is a difficult task to estimate with any degree of accuracy the numbers of these heath-loving birds, but it cannot be very large. So far as I have been able to ascertain personally or by correspondence the Ringed Plovers only nest in eight localities in Thetford district, although they are likewise found in the Lark valley. These are Lakenheath, Wangford and Thetford Warrens, and Thetford, Barnham, Santon Downham, Wretham and Roudham Heaths. The two first named are on the border of the fenland, and Wangford Warren seems to be most favoured in point of numbers. Two or three pairs respectively are all that seem to nest upon Thetford, Barnham, Wretham, and Roudham Heaths. Previous to the spring of 1897 the latter was unknown to me as a breeding locality of the Ringed Plover; but three pairs then occupied a small "breck" in a corner of the heath. From the accounts we possess, it would seem that the Ringed Plover has become sadly diminished of late years in its local breeding haunts. Salmon termed them "very abundant" at Thetford in 1836. In 1863 they were "seen in small numbers" at Elveden, presumably on Thetford Heath, the locality they now occupy.

Certain theories have been advanced to account for the inland nesting of this bird; but that of Prof. Newton, the late Dr. Hind, of Honington, Suffolk, and other eminent authorities, seems most worthy of credence. Their supposition was that the Wash extended as far inland as Brandon; Wangford and Lakenheath being on its shores. They likewise thought that an arm of the Wash extended along the valley of the Little Ouse to Thetford, and that consequently the present breeding-places of the Ringed Plover were coast sands in the post-glacial epoch. And year by year hereditary instinct has brought the warren-haunting Plovers inland, which led the first President of the Norfolk and Norwich Naturalists' Society to hazard the opinion in 1879 that with the death of the last of the heath-loving Plovers would cease altogether the inland appearance of that species. If the diminution in numbers of the Ringed Plover be not general amongst the shore birds, it would tend to further substantiate this opinion. In addition to the Ringed Plover, numerous species of plants and insects peculiar to the sand-dunes of the coast are found upon these inland heaths.* The place-names of the district strengthen the theory that the Wash formerly extended as far as Brandon. It is extremely suggestive to note that the sandy heath at Elveden whereon the Ringed Plovers breed is still known as the "denes." This is the name applied on the Norfolk coast to the low sand-hills, and is synonymous with "dune." Although on the slope of a valley up which an arm of the Wash might at one time have possibly extended, the nearest stream is now more than a mile distant. The other breeding-places mentioned in the district would all have bordered upon an arm of the sea extending up the Little Ouse valley, except those on Roudham and Wretham Heaths; but neither of these would be more than four miles from the nesting-place on Santon Downham Heath. With so many other heaths and warrens in the district, it seems strange that their range should be so limited. In addition to the coast insects and plants found in these inland localities, *Helix virgata* and other species usually considered littoral abound.

J. D. Salmon, F.L.S., recorded the date of their first arrival as February 16th, 1834; February 5th, 1835; February 15th, 1836; and February 14th, 1837. They have, however, been seen as early as February 7th. Ringed Plovers were numerous on March 13th, 1835; commenced laying on April 1st; a nest with four eggs found on June 5th, and all departed by August 30th. In the following year they were again numerous on March 13th, but took their departure a week earlier, on August 23rd. Personally I have never seen them on Thetford Warren before March; but this doubtless arises from my limited opportunities of observation, rather than from a later inland migration. Clutches of two eggs have been found by March 30th. Nest there is none, as a rule, the merest hollow in the sand being utilised. Very rarely there are a few short pieces of dried grass. September 1st is the latest date on which the Ringed Plovers have been seen in the district. Their departure is usually taken about mid-August, which accounts for the local remark that they "go with the Cuckoos." The Ringed Plover is known locally as the "Stonehatch" or "Ring Dotterel," the former being more generally used. It is worthy of mention that the bracken-covered areas of our large warrens are not beloved of the Ringed Plover, but that it haunts stone-covered patches which are perfectly open. In such spots it is almost impossible to discover the Ringed Plover when motionless; when running the eye is attracted by the action. If one wanders too near the nest both birds will fly round and round the intruder's head, uttering their short mellow whistle. And if there should be nestlings they will feign a broken wing—anything to draw attention to themselves rather than their young. These tactics, however, are not always successful, and the men who can always find the nest of a Lapwing by the actions of the hen bird, can in like manner find that of the Ringed Plover; and I fear that even these eggs are sold, with those of Black-headed Gulls, Snipe, and sundry others, as "Plovers' eggs."

---

* *Vide* paper "On Certain Coast Insects found extending inland at Brandon, Suffolk." By G. C. Barrett, Trans. of the Norf. and Nor. Nat. Soc., vol. i., 1870, p. 61, and 1871, p. 40. Also notes in the same Transactions on coast-plants found inland by Messrs. H. D. Geldart and Clement Reid, F.G.S.

THE MIGRATION OF BIRDS:

A PAPER ADDRESSED TO THE LIGHTHOUSE KEEPERS OF THE ENGLISH CHANNEL, AND TO THE LOCAL ORNITHOLOGISTS OF THE COUNTIES ABUTTING THEREON.

By J. A. Harvie Brown,
Member of Committee of Migration of the British Association.

Between Varne Lighthouse in the east, and Start Lighthouse in the west, along the south coast of Great Britain, no returns have been received regarding the "Migration of Birds" by the British Association Committee on that subject, although schedules have been returned from all the other lighthouses of Great Britain and Ireland during *nine years'* endeavours of the Committee (1879 to 1887), and resulting in the Digest of the Reports of the Committee of these years, which latter took Mr. Eagle Clarke seven more years to work out, and which was presented by him to the Committee at the Liverpool Meeting of the British Association in 1896. The fault of this big blank in our annals does not lie with the appointed members of the Association's Committee. As a member of that Committee, I think the blank should be filled in. I therefore address this article, hoping that it will be circulated through them to the light-keepers of the south coast of England. It appears to me that such would be all the more important as an annex to Mr. Eagle Clarke's Digest, because the existing blank leaves a part of his deductions unsupported to the extent they should be; I mean his conclusions as to what he has termed in his Digest the *east-to-west migration line.*

It seems also, at the present time, specially desirable to obtain positive records from these stations, as we have good reason to believe that fresh series of observations will be before long undertaken at prominent stations outside our British limits, but upon the same east-to-west line. If these observations could be arranged for upon this south coast-line of England simultaneously with the observations about to be instituted outside our British limits, above referred to; and which we expect will be undertaken, first in the autumn of 1898, and, if all goes well with the project, in the spring of 1899, by a member of our Committee: then a *completely new* set of observations would be instituted.

We cannot see that any great difficulty should exist if some south-country ornithologist will undertake both the work required, and the education of the lighthouse reporters, as has been done heretofore on our other coasts. Such work to be effective requires close attention and personal trouble in keeping in touch with the lighthouse reporters, with a considerable amount of personal supervision and active controlling interest. Personal visitations to the lighthouse reporters, a certain amount of education by the person who undertakes the charge by the dissemination of useful and practical literature, the collection of wings of birds, properly labelled with dates and records in accordance with the circulated schedules, and their items, are the most important branches of the enquiry.

We earnestly urge upon the ornithologists of the southern counties of England the importance of this quest. It is not yet too late to undertake it. If promptly taken up upon this hint, I am sure the present constituted Committee are not going outside the limits of the powers bestowed upon them in their urging the extension of the enquiry entrusted to their charge. And further, should any ornithologist of the south coasts of England rise to the occasion, I am sure that we are safe in promising every necessary assistance which our past experience in similar work enables us to give.

We want returns from all the lighthouses between Varne (east) and Start (west), and we want some resident ornithologist to take supervision of the whole, and to report.

With this belief we ask the British Association to add to our number one or more accredited naturalists, who will undertake the enquiry for our southern coast of England.

NOTES AND QUERIES.

MAMMALIA.

Trapping Shrews and Voles.—One is usually led to suppose that the Pigmy Shrew, *Sorex minutus*, is a scarce species in the South of England. It may consequently be of interest to put on record the capture by myself of a couple of specimens at Combe Martin, in North Devonshire, last September. I have also on previous occasions taken it at Southerndown, in Glamorganshire, in August, and in Leigh Woods, Somersetshire, in mid-winter. It is of course not to be supposed that the species is comparable in frequency of occurrence with the larger species, *Sorex araneus*. Perhaps on an average indeed only ten per cent. of the Shrews captured by myself have been Pigmies. But it by no means follows that a species of mammal is scarce because it is hard to trap or rarely seen. Take, for example, the case of our two small Voles, *Microtus agrestis* and *M. glareolus*. A few years back it was the custom to publish the capture of every specimen of the latter, and record it as "new to the county." Yet nothing, I take it, is more certain than that the species is, and always has been—at least since historic times—abundant everywhere throughout Great Britain. I myself have caught it night after night in numbers in the counties of Glamorgan, Gloucester, Somerset, Devon, and Dorset. It even outdoes *Mus sylvaticus* in obtrusiveness. But with the Field Vole it is far otherwise. I have trapped it, it is true, but only at rare intervals, and, so to speak, by chance; that is to say, the specimens were found in the traps, either snapped by the hind quarters or lying in some other position, showing equally clearly that their capture was due to pure bad luck, like an accidental dart into the trap, and not to any eagerness after the bait. In fact, at a rough estimate I should compute that in the case of these two species the percentage of *agrestis* captured had not been higher than five; yet this is not attributable to any scarcity on the part of *agrestis*, nor to trapping in unfavourable localities. Traps have been set in their runs in the green fields, and even close to the nest containing young, but without success. Nevertheless the species is probably abundant everywhere in meadows and hay-fields, not to mention hedges and banks, where I have myself seen it. The same may be the case with the Pigmy Shrew. It may be as abundant as *S. araneus*, but harder to trap. The small amount of experience I have had of the species lends some support to this supposition, for in at least two cases I clearly recollect that the specimens were caught in the way mentioned above as characteristic of *A. agrestis*; that is to say, with their heads nowhere near the bait. In conclusion, it may be added that in my opinion the difference with respect to being trapped observable between *agrestis* and *glareolus* is partly, at all events, explicable in connection with an habitual difference of diet between the two species. At the time when I had the best opportunities of trapping *agrestis*, I was not aware that bait like bread, cheese, boiled potato, and the like, which seem to be so attractive to *glareolus*, have no charm for the other species. This fact I have subsequently learnt by keeping the two in captivity; *glareolus* is omnivorous, *agrestis* much more of a vegetarian, going mad with delight over a piece of lettuce; but he is also, *miserabile dictu*, like his cousin *amphibius*, by no means impartial to members of his own species.—R. I. Pocock (British Museum, Nat. Hist.).

AVES.

Osprey in Dorset.—A very fine specimen of the Osprey, *Pandion haliaëtus*, was recently shot in the Fleet Waters, Dorset, by Mr. Russell, of Charlestown, an old sportsman bordering on seventy years of age. Mr. S. H. Wallis, of Weymouth, having heard that a rare bird had been obtained, proceeded to Charlestown, and at once recognized this very rare species on the British list. Mr. Wallis, who is a thorough naturalist, regrets the unfortunate death of such a rare visitor to English waters, and has added it to his collection. The bird has been entrusted to Mr. Watson, taxidermist, of Dorchester, for careful preservation.—(H. E. Dresser, Orpington, Kent.)

Sparrowhawk nesting in Thorn-tree.—Is it not unusual for a Sparrowhawk to build a nest in a thorn-tree when suitable oak-trees are plentiful? My experience, which is fairly large, proves this to be the contrary. I found such in Cornbury Park, Oxon, on June 23rd last, containing six young. I might add that the nest was a completely made new structure, and was not situated in a fork, but among the smaller boughs near the top. At no great distance away, in a very similar position, was an old Squirrel's drey, the inside of which contained a Great Titmouse's nest, with two young and four addled eggs.—R. U. Calvert (Ascott-sub-Wychwood, Oxford).

Local Name of the Sheldrake.—I should be interested to know if the Sheldrake, *Tadorna vulpanser*, is known as the St. George's Duck on all parts of the English coast which this bird frequents. Some friends shot a pair of these handsome Ducks about a year ago on the south coast of Wales, and told me that these birds were known there by the above name. I do not remember having seen the term in any book on ornithology, and fancy it must be used only in a few counties on the west coast. Some years ago I first heard the name used by a fishmonger when he offered me a Sheldrake for sale.—C. B. HORSBRUGH (Richmond Hill, Bath).

[In Dr. Bowdler Sharpe's 'Handbook of the Birds of Great Britain' will be found an observation by Mr. W. E. de Winton, "that in South Wales the local names for this species are 'Perrénet' and 'St. George's Duck.'"—ED.]

Fork-tailed Petrel in East Suffolk.—A specimen of this bird was picked up on the ground alive, but quite exhausted, not far from the pier at Lowestoft, on Oct. 4th, and received by me in the flesh a few days later. It was in very good condition.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds, Suffolk).

Nesting of the Great Northern and Black-throated Divers in Shetland.—At the request of Mr. O. V. Aplin (*ante* p. 425), I give below the extract from my note-book recording the finding of the eggs of *Colymbus glacialis*. I was under the impression that this species had been proved to have bred in the British Islands. The resident who gave me the locality said he had found them there some years ago, and had then taken their eggs. I have written to him to supply, if possible, the date, and also particulars of the finding of the Black-throated Diver breeding; but for obvious reasons I do not care, nor have I permission, to publish his name. The note, made on the spot, is as follows:—"June 2nd. Started for walk over the hills towards Clouster. After going about seven miles I came across a fair-sized loch, seemingly miles from any habitation, and on glassing it I saw a Diver swimming near the shore. Creeping cautiously nearer, I came to about seventy yards from the place, when up got a couple of Great Northern Divers. Their heavy and laboured flight reminded me greatly of that of the Shag. I had my glass on them, so at once distinguished them before finding the eggs. They were placed on the summit of a slight grassy slope, and were about six feet from the water, the grass being merely flattened for their reception. The intervening track, mentioned as usually being found, was wanting in this case; but no doubt this may be accounted for by the eggs being only slightly incubated. I lay in wait for an hour, but the birds showed no signs of returning; and next day I had to leave the neighbourhood." The dimensions of the eggs are 3·80 × 2·15 and 3·55 × 2·15. — BERNARD A. E. BUTTRESS (Hendon, Middlesex).

P.S.—The following is the reply which I have received from the resident in Shetland. It will be noticed he bears out my statement (made in my list of birds observed) that the *Common* Tern is there:—"Oct. 10th, 1897. Great Northern Diver's eggs I took several times previous to 1880. After 1883 I was absent three years, and on my return I found sad havoc played with mostly all the Divers. Since that time I have only twice taken the nest of the Great Northern Diver, 1891 and 1893; each time one nest only. The gentleman to whom I showed the Blackthroat breeding, and who gave me Saunders's 'Manual,' was Fred Howe Windham, Esq., whose address I do not at present know. His last address three years ago was The Castle, Castlerea, Roscommon. Terns, *Common* and Arctic, have left; also the majority of sea-birds. Excepting Golden Plover, few winter visitors have yet arrived."—BERNARD A. E. BUTTRESS.

Noddy Tern in Cheshire.—The other day, when looking through a collection of stuffed birds, I saw and obtained a specimen which has since been identified as the Noddy Tern, *Sterna stolida*, Linn.; it is in immature plumage, the grey on the crown being just visible. It was shot on the Dee marshes in winter about six years ago. As I believe this Tern has been only twice recorded in Europe,* I think this specimen worth mention.—F. CONGREVE (Burton Hall, Neston, Chester).

P.S.—I obtained the Noddy from a small private collection belonging to Mr. Lawton, an ex-tenant of my father's. He killed and stuffed it himself. It is at present in our collection at Burton Hall, but it has been identified by the taxidermist of the Liverpool Museum, and by Dr. Herbert Dobie, of Chester.—F. L. CONGREVE.

Eggs of the Roseate Tern.—With regard to Mr. Potter's remarks on the above (p. 467), my experience, and that of several of my friends, is that we, at any rate, are not able to diagnose with certainty the eggs of these birds from those of the Common and Arctic Terns without further data to go upon. I do not say that Mr. Potter is wrong in his assertions, as it is very unwise to dogmatize on these matters; but I merely state my experience. Everyone who has visited a large breeding haunt of the Arctic or Common Tern knows what an infinite variety the eggs present in form, size, ground colouring, and markings; and with regard to the usual test given in books for eggs of the Roseate Tern, I have seen a pair of Arctic Tern's eggs far more elongated than any Roseate Tern's I have yet examined. I have not examined the shells of any of the three species microscopically. I believe it was Dr. Johnson who remarked that "a wager is the butt-end of a fool's argument," and I should be very sorry to back myself to pick out of a basket containing the eggs of all three species three eggs of the Roseate Tern in three consecutive draws, at the rate of a sovereign an egg; for, from what I have seen, eggs of all three species could be chosen so alike that it would defy the best oologist living to discriminate between them. I may mention that an ornithological friend of mine once backed himself to pick out not only the egg of Brünnich's Guillemot, but also that of the Ringed Guillemot, from a basket containing eggs of the common bird. Needless to say he was found wanting. Mr. Potter mentions the *late* Canon Atkinson. I am glad to say that the author of 'Forty Years in a Moorland Parish' is still hale and hearty, and I had the pleasure of a long talk with him not many weeks ago at his home in Danby in Cleveland.—Oxley Grabham (Chestnut House, Heworth, York).

---

* Two specimens taken off the coast of Wexford, one still preserved in Dublin Museum.—ED.

Nesting of the Great Plover.—While crossing a nesting ground of the Great Plover in Lincolnshire, on June 7th last, I chanced to run against a nest containing four eggs, two rather larger and longer than the other two, thus having the appearance of belonging to two hens. The eggs were quite warm, and on my approaching the nest a Great Plover rose about eighty yards beyond it.—R. U. Calvert (Ascott-sub-Wychwood, Oxford).

Black-winged Stilt in Somerset.—I have recently received a present of a specimen of the Black-winged Stilt, shot at Sedgmoor in July, 1896, a distance of four miles from here. The gentleman from whom I obtained it, and who had it in the flesh—Mr. C. Hooper, taxidermist, of Wells—thought it was some species of Snipe. The legs are about ten inches in length. This is, I believe, the first mention of the bird from Somerset, and the second from the West of England, one having been reported from Anglesea by Montagu. I shall be happy to send it for any naturalist's inspection.—Stanley Lewis (39, High Street, Wells, Somerset).

Roosting of the Swift.—*Apropos* of Mr. Gyngell's letter in last month's 'Zoologist' (p. 468), a friend of mine, when standing outside the house one evening at about eight o'clock, saw a Swift fly up and settle flat against the wall just under the eave. He watched it for some time, but it never moved. These birds evidently roost in this position, for which the forward-pointing hallux and toes of all the same length are well fitted. The Swifts did not leave the Norfolk coast till about Sept. 5th, but from the end of August till then were flying about along the cliffs in considerable numbers.—Bernard Riviere (82, Finchley Road, N.W.).

Wonderful Egg-producing Powers of the Wryneck.—A friend of mine discovered the haunt of a pair of these birds, *Iynx torquilla*, in a plantation at Farnborough, in Kent; he had noticed them going and coming from an old decayed plum-stub about 5 ft. 6 in. or so in height. Not being able to see far down the hollow limb, he broke a strip away, which fortunately snapped off at the very bottom of the hole, a distance of fully two feet. When first found, on May 23rd, 1897, there were seven eggs lying on the bare wood, which he took, afterwards replacing the strip in position. Two more eggs were laid by the 25th inst., and were left *in situ quo*, but had disappeared somehow the next morning. The bird deposited another on the 26th inst., to which were added two eggs of the House Sparrow, to make up for those that were missing; all the three, however, lay broken at the foot of the tree on the following morning. She then seemed to settle down to regular business, and continued laying every day without intermission, each egg being removed as soon as laid, the total number up to July 17th reaching sixty-two, less the three that were broken or missing, leaving fifty-nine eggs in my possession from the one bird, which I fancy must establish a record. Concurrently with this another bird was laying in an adjacent plantation, but in a more erratic fashion, the eggs in this case being removed in batches of four and five. On two occasions she stopped laying for a day or two, and then continued depositing again; total number of eggs forty-three. Yarrell mentions an instance on the authority of a Mr. Salmon, who states he took no less than twenty-two eggs from a Wryneck that had laid on a Redstart's nest of the preceding year. Not being easy of access from above, the nest was bodily removed by means of a very convenient hole at the bottom no less than five times before it was finally abandoned. Again, in 'Lloyd's Natural History' we find another case recorded by a Mr. Norgate of a Wryneck laying forty-two eggs for two years in succession (1872–73); as Mr. Seebohm remarks in 1874, "her reproductive powers were apparently exhausted, as only one egg was laid, and in 1875 the place was deserted." No doubt there may be many other parallel instances, and I should be glad to know if anyone has heard of the larger number, *viz.* sixty-two, having been either equalled or surpassed. It seems such an extraordinary number that it is certainly worthy of being placed on record.—H. ALDERSON (Hilda Vale Road, Farnborough).

Popular Fallacy concerning the Cuckoo.—Perhaps the following rhyme may be of interest to Mr. Davenport (if not already known to him) and others, as it may possibly explain the origin of the popular fallacy concerning the Cuckoo sucking the eggs of other birds. The rhyme is said to be well known in the midlands:—

> "The Cuckoo is a merry bird,
> *She sings as she flies*;*
> She brings us good tidings,
> And tells us no lies.
> *She sucks little bird's eggs*
> To make her voice clear,
> That she may sing Cuckoo
> Three months in the year."

—C. B. HORSBRUGH (Richmond Hill, Bath).

---

* See 'The Zoologist,' 1894, pp. 264, 306, 307, 308, 338, 340.

Do Cuckoos suck Eggs?—I much regret I have no proof whatever to offer Mr. Davenport that the Hawfinch's eggs mentioned in 'Zoologist,' p. 426, were sucked by Cuckoos; neither have I any proof that they were sucked by Jackdaws. But the fact still remains that not only were the eggs sucked in the above-mentioned nest, but the contents of thirty-two other nests of the same species, with those of some scores of other nests I saw, had met with a similar fate. Cuckoos in this locality have been exceptionally plentiful during the past season, and with one exception (on an island in the Outer Hebrides during the spring of 1895), I have never known them to be so numerous.—R. U. Calvert (Langley House, Ascott-sub-Wychwood, Oxford).

Hypolais polyglotta in Sussex.—As reported by Mr. Howard Saunders in the current issue of 'The Ibis,' the second of the Warblers mentioned by Mr. Ticehurst (*supra*, p. 333) has turned out, as the latter surmised, to be of this species. The specimen has been examined by Mr. Saunders and others, amongst them by the present writer, and is now in the possession of Mr. Boyd Alexander. The species has already been declared to be a member of our avifauna by Mr. Murray A. Mathew ('Birds of Pembrokeshire,' pp. 9, 10), but in this instance doubt may perhaps be reasonably entertained of the correct identification of the species.—W. Ruskin Butterfield (St. Leonards-on-Sea).

Willow Wren singing in Autumn.—On looking over my note-books for 1891–93, in which years I noticed more particularly the dates on which our different birds were singing, I find that the Willow Wren figures therein as a comparatively common autumn singer. Thus in 1891 the dates are June 15th, Aug. 14th–22nd; in 1892, Aug. 1st–17th; in 1893, June 16th, 20th, July 1st, 6th, 25th, Aug. 7th, 9th, 24th, Sept. 8th. These notes refer mainly to Midlothian.—Robert Godfrey (46, Cumberland Street, Edinburgh).

Mealy Redpoll off Coast of Kerry.—Between 1889 and 1893 I received seven specimens of the Mealy Redpoll from the Tearaght Rock, a small but precipitous islet out in the Atlantic, nine miles west of Kerry. These Redpolls are very large, and I have always regarded them as Greenland Redpolls, *Linota hornemanni*, Holb. In this I hope to be confirmed by Mr. Howard Saunders, to whom two stuffed specimens have just been forwarded. Five were obtained in September, one in October, and one in November.—Richard M. Barrington (Fassaroe, Bray, Co. Wicklow).

Note on Pied and Grey Wagtail in the Itchen Valley.—I wish to correct a statement I made on p. 462 in the October issue of 'The Zoologist' with relation to these birds. I there stated that by the end of April Pied Wagtails, with their congeners, had deserted the water-meads near the town (Winchester) on the southern side, save for some of the first species, preparatory to spending the breeding season further down the river. Of course, as a rule, the Grey Wagtail leaves England altogether at the end of March, although I may mention that I have several well-authenticated records of its breeding in the Itchen Valley; and last May I myself saw the bird some four miles from the town. At the end of April, indeed, Pied Wagtails do extend their range a good deal to the south for the breeding season, and in autumn and winter congregate into small parties of seven and eight, which are especially regular in the near water-meads just south of the town, in company with parties of the Grey Wagtail. I also stated that both species returned to these water-meads about the middle of November. This is not accurate; the *usual* date is about the beginning of October, though last year I did not observe any Grey Wagtails near the town until December. The parts of the Itchen most frequented by both species in winter are decidedly the rich and fertile water-meads immediately south of the town for a distance of about five miles. This district is a favourite one for resident birds in winter, as Reed Buntings, Starlings, Rooks, Gulls, Jackdaws, Dabchicks, &c.—G. W. SMITH (Ivy Bank, Beckenham).

Strange Nesting Habits—Nuthatch and Starling.—Mr. W. G. Clarke's article last month (p. 449) reminds me of the following case of two birds building in close proximity to one another. I had noticed a pair of Nuthatches going in and out of a hole in a huge oak some time in the beginning of last May, so one day I brought a chisel and hammer, and set to work to reach the nest. At the first few strokes of the hammer a Starling flew out with a scream of alarm. I thought this was rather curious, but went on enlarging the hole, until I could get my hand in. All this time the two Nuthatches had been in a great state of agitation, uttering their "twit, twit-tit" of alarm. On inserting my hand I found that just beyond the entrance of the hole there was a cup-shaped hollow containing a Starling's egg. Beyond this there was a turning to the left, at right angles to the entrance. Round this corner the Nuthatches' nest must have been, but I could not get my hand there. Almost directly I had left the tree one of the Nuthatches entered the hole. In this case the Nuthatches must have hopped over the sitting Starling every time they went to their nest.—BERNARD RIVIERE (82, Finchley Road, N.W.).

The Question of Popular Ornithological Fallacies.—I am glad that Mr. Davenport has defended the Cuckoos (p. 473). Not only is it rash to conclude, because sucked eggs are found, that Cuckoos are the culprits, but such statements bring a beautiful and interesting bird into unnecessary disgrace, and into danger of sharing the fate of the scores of harmless Kestrels which are annually destroyed. Yet it seems hardly fair to class the belief that Cuckoos suck eggs with such absurd fancies as that Nightjars suck the milk of goats, or that Cuckoos become hawks in winter. Hitherto I have supposed that this belief arose from the Cuckoo having at times been seen with its own egg in its mouth preparatory to depositing it in a nest. But this year I have heard two stories, based upon careful observation, which I must confess have rather shaken my faith in the Cuckoo, and which I will relate, and then leave your readers to form their own deductions. (1) Near Haddon Hall is a signal-box. One day this year the signalman saw a Cuckoo alight on the bank of the cutting near his box. As it did not rise again at once, but appeared to be busily engaged on the bank, he left his box, and went to the spot to satisfy himself as to the nature of the bird's doings. As he approached, the Cuckoo flew up, and just where it had been he found a Wagtail's nest with one egg in it, but on the bank outside the nest were the broken shells of other eggs. (2) A gamekeeper was crossing a moor (about six miles north-east of this place) when a Cuckoo rose from the ground a few yards in front of him. He at once went to the spot from which it rose, and there found a Grouse's egg partly sucked. I have seen the egg, and certainly the slit (for it was not a round hole pierced in the egg) was such as a Cuckoo's bill might be expected to make.

Some of the fallacies mentioned by Mr. Davenport result from ignorance and nothing else, but others arise from inexperience only. It is hardly surprising that to a casual passer-by the Landrail should appear to ventriloquise. The same may be said of the *burring* of the Nightjar. Mistakes are sometimes made because an observer takes for granted facts are universally and invariably true when they have been proved by his own personal experience. But is it not equally foolish for an ornithologist to suppose that a phenomenon has never occurred merely because it has not come under his own notice? Take the case of the Swift on the ground. Mr. Davenport considers it a popular fallacy resulting from ignorance to suppose that a Swift cannot arise again from the ground. Mr. Howard Saunders, in his 'Manual,' merely states that, "contrary to the popular belief, the birds are able to raise themselves from the ground." But he does not imply that they are always able to do so. No doubt they very often are able thus to raise themselves. Nevertheless, my own experience would have led me to the contrary conclusion, for I have never seen a Swift rise from the ground, though from time to time I have picked them up and thrown them into the air, and then they have flown away.

I should be glad to know whether experienced field naturalists in general consider it a "preposterous notion" to suppose that a Lapwing may attempt to draw the attention of man or dog from her nest. Ten years ago last May I came suddenly upon a sitting Lapwing. She rose hurriedly from her nest, and tumbled along the ground, as if she could neither fly nor run.* Am I to suppose that she had temporarily lost her power of flight owing to cramp through sitting long in one position, or that her behaviour was merely an expression of anxiety, or did she indeed wish to distract my attention from the whereabouts of her nest? What, may I ask, causes Ducks to leave their young, and to flap along the water in front of an intruder?—W. STORRS FOX (St. Anselm's, Bakewell, Derbyshire).

INSECTA.

The Stridulation of Orthoptera.—I have read with much interest Mr. Aplin's note in 'The Zoologist' for September (p. 432) and, at least as far as Orthoptera are concerned, I can fully corroborate his account of the ventriloquial powers of these insects. Of the three groups of the stridulating Orthoptera, the first is the section called Acridiodea, which produces a buzzing sound by the friction of the posterior femora, which are finely serrated inside (*vide* Darwin, 'Descent of Man,' 2nd ed. p. 286, fig. 14), against the elytra. As the arrangement of the veins of that part of the elytra affected varies with the species, so does the intensity of the sound. It is a useful accomplishment, and to be able to determine the insect by its stridulation without seeing the performer is not very difficult.

In the Locustodea the sound is produced very differently, namely, by the friction of the basal part of the left elytron over the same part of the right, these parts being modified for the purpose. The stridulation thus produced is very shrill and hard to locate. I have often stalked down our large *Locusta viridissima*, L., and have usually found it on a bed of nettles or thistles, in the middle of a corn-field, or in stubble, invariably much farther away than I at first expected. The sound appears to come from almost beneath one's feet, but on walking straight towards it, seems to recede into the distance, until it suddenly strikes the ear, very harshly and shrilly at close quarters. As soon as the would-be capturer approaches, the sound ceases, and the insect remains invisible. The assimilation of the green colour of the insect and the green surroundings which it always chooses as a band-stand is so close, that it is almost impossible to detect the creature until it recommences to chirp, when the rapid movement of the elytra betrays its whereabouts. The stridulation of this species is loud and prolonged, but in several of its relatives is short and sharp, and all the more difficult to locate, as the observer does not obtain a fair chance to listen attentively. Such is the case with *Platycleis grisea*, Fabr., common on the chalky cliffs of our south coast. *Thamnotrizon cinereus*, L., may be often heard uttering a short sharp "tss, tss" in brambles and thickets before a shower of rain, or on a fine evening in the late summer and autumn; and it often chirps late into the night. The "Canadian Band," as the natives of the Dominion call the incessant chirping of insects after nightfall, is not heard in Britain, but in most countries, especially in the tropics, the sound is very loud, persistent and annoying. The chirp of the Cricket is well known, ana also possesses ventriloquial properties to a certain extent.

---

* *Vide ante*, p. 504.—ED.

This power of stridulation, in the Saltatorial Orthoptera, is confined to the males, except in one curious family, the Ephippigeridæ, confined to the south of Europe and the north of Africa, in which the female is also capable of producing a sound when irritated or frightened. I have never heard any insect of this family perform, but should think that they are able to chirp very loudly. The elytra are abbreviated until they are quite rudimentary and useless for anything but musical purposes; the posterior part of the pronotum is raised, and seems to act as a sounding-board, as Darwin noticed (*op. cit.* p. 284). It was this form of the pronotum that suggested to Serville the name *Ephippigera*, from its resemblance to a saddle. One interesting effect of this power of stridulation among the Orthoptera is that it puts, or seems to put, a check upon a strong tendency to abortion of the organs of flight. The wings themselves are not affected, and in a large proportion of species are quite rudimentary. The elytra of the females are often much smaller than in the males, as their services are not required for musical purposes. But in the males, even if the wings are abortive and the elytra useless for flight, the basal part at least of the latter usually remains, sometimes very highly modified, for the purpose of performing stridulation. The comparative development of the organs of flight in the Orthoptera is such an inconstant character, that no species is based upon their abortion or perfect development. There are a large number of species in which the wings are abbreviated normally, and perfectly developed by aberration (perhaps atavism), and *vice versâ*. In our commonest Grasshopper, *Stenobothrus parallelus*, Zett., the wings are rudimentary, and in the females the elytra also; but in the males the latter are perfectly developed for stridulation; yet there is a rare variety in which the wings are perfectly developed. I possess a very curious and rare variety of the tiny Cricket, *Tridactylus variegatus*, Latr., with the wings perfectly developed and caudate, the typical form having entirely abbreviated organs of flight.—Malcolm Burr (Bellagio, East Grinstead).

Stridulation of Cicadidæ in Mashunuland.—You will observe that in accordance with your request I have paid special attention to the Cicadas, and very interesting insects I have found them to be. Personally I was much surprised and pleased to find so many different species in so limited an area, say eight square miles; but I am not sufficiently acquainted with them to know whether this is an unusually large number.

Perhaps the few succeeding notes, such as they are, may be of use and interest to you. I reached this locality in the end of July, when there were apparently no Cicadas about. The little blackish species, *Tibicen nigricans*, Stål, was the first to appear, which it did during the second week in August, remaining till the end of September. Its call is quite distinct from all the other species, and not nearly so loud. It consists merely of a short chirp, hanging slightly on one note, and ending with a quick rise, the sound being incessantly repeated. The next species, *Platypleura rutherfordi*, Dist., began calling in the middle of September. I made no particular note of its cry, except that it was much louder than that of the former, and continuous. It was apparently confined to the smoother trunks of the "mosasa" tree. It continued calling until Oct. 15th, when I shifted camp four miles away. At this spot it did not occur, owing, I presume, to the fact that the "mosasa" tree is not found there, being replaced by a very nearly allied species, called by the Kafirs "mfuti." However, when I went back on the 22nd I could not find any of them. At my new camp, on Oct. 17th, I caught three species.

The species, *Pœcilopsaltria marshalli*, Dist., occurs only on "mopani' trees, frequenting the smaller branches, to which its colouring is very well adapted. Indeed, I have found it to be one of the most difficult to detect, which doubtless accounts for the fact that it is the most easily approached, and sits very close. Indeed, I have often struck the branch on which one has been sitting, sharply with my net, without disturbing it. Its cry is the most monotonous of any species I know, being one continuous unbroken churr. I noticed a Cicada calling among "mopanis" in the end of September, which was probably this species. It disappeared in the middle of this month.

Pœcilopsaltria bombifrons, Karsch, is not confined to any one tree, but frequents the small, smooth branches of many trees and shrubs. Its cry has a considerable range, starting on a somewhat low note and gradually rising to a high pitch, then falling again, and so on. I once came across a very large concourse of this species, there being quite sixty on a small bush, and making a terrible noise. At the first sweep I took two males and five females, and of the twenty I caught only six were males. By the way, I have noticed several facts which would lead me to suppose that Cicadas were polygamous, and I should be much interested to know whether your experience would bear this out.*

---

* Polygamy is quite probable, though in the Transvaal I had reason to believe that one species paired during the breeding season ('Naturalist in the Transvaal,' p. 67).—Ed.

Pœcilopsaltria horizontalis, Karsch. This handsome species is by far the most scarce, and, moreover, I found it difficult to catch, owing to its habit of sitting high up on the small branches of the "machabel" tree, to which it seems confined. Like the preceding species, the cry starts low, and gradually rises to a very shrill and piercing note, much louder than that of any other species. Although I only captured it first on Oct. 17th, it must have been out some time before, as it disappeared about the end of the same month. I forgot to mention that, unlike *P. bombifrons*, the high note in its call is sustained for some time, alternating in regular cadences with the lower notes.

Platypleura centralis, Dist., differs from the preceding species in that it frequents the main trunk of its special tree (the "mfuti"), and this I suppose accounts for its markedly longer rostrum. The colouring is beautifully adaptive, and the black central line tends to the deception, from its resemblance to the cracks in the scaly bark. Like *Platypleura rutherfordi*, this insect continues calling after sundown, almost till dark; and I have also been awakened by it a good half-hour before sunrise. I have taken five examples at light. Is it possible that Cicadas fly much at night? When taking their numbers into account, it is very seldom indeed that I have ever seen any on the wing in the daytime, except when disturbed. This species, and also *Pœcilopsaltria bombifrons*, seem very subject to attack from a very large *Asilus* fly, which catches them on the wing. I have seen a good many too caught at rest by small Lizards. The cry is fairly high pitched, but not shrill or piercing; it is fairly steady, but broken occasionally for a few seconds by a lower churring note.

Pœcilopsaltria leopardina, Dist. I captured my first specimen on Nov. 2nd, but am inclined to think it was about the latter half of October, and that I overlooked it as being *P. horizontalis*. The cry is very similar, and has the same piercing shrillness, but it is not so loud, and the preliminary lower notes are characterized by a curious throbbing sound. At present it is quite the most ubiquitous kind, frequenting many different kinds of trees, but I have only seen it in any numbers on the "machabel." Have taken three at light.

Monomatapa insignis, Dist. I first noticed this species on the 15th, sitting on the thin stems of a bush, which occurred in a long strip between two patches of "mopani." There were a lot of them, and they were very conspicuous on the leafless stems; but now they have emigrated to the "mopanis." They did not begin calling till the 18th, and are hardly yet in full song. The cry is loud, but the chirp is not short or sharp, and there is an additional note at the end of it.—Guy A. K. Marshall.

[The above interesting notes are contained in a letter dated Nov. 21st, 1895, which I received from Mr. Marshall, with a collection of Cicadidæ made at Gadzima, on the Middle Umfuli River, Mashunuland. The collection I have since worked out (Ann. Mag. Nat. Hist. Ser. 6, vol. xix. p. 125, 1897), and the present discussion affords a good opportunity for publishing these original field observations.—Ed.].

Stridulation of Cicadidæ.—Both in Central Africa (Nyasaland) and the West Indies I have taken Cicadas at light. In the Transvaal I have also taken them at rest on tree-trunks, but I do not think they were taken in consequence of their "song" having thus localized them. It is always easy to spot what tree they are on, but I noticed they chose the tops of small trees which were out of reach and sight, as there they got the most sun. It is the warmth they need, and they do not generally shrill unless the sun is out. I have netted them in bright sunshine, as they flew off the trees on my approach. At Zomba I caught a large species by actually localizing its noise, but that was the only instance of the kind that I remember.—Percy Rendall (Devonshire Club, S.W.).

Stridulation and Habits of Cicadidæ.—By the above notes it will be seen that both Mr. Guy Marshall and Dr. Percy Rendall took Cicadidæ "at light." This was my own experience in the Malay Peninsula; and yet, strange to say, in South Africa, though I visited the electric lamps of Pretoria for three years, and made a large collection of Heterocera and other insects therefrom, I never saw nor took a single specimen of the family under such conditions.

In addition to the two species, *Platypleura centralis* and *P. rutherfordi*, which Mr. Marshall found calling "after sundown almost to dark," my experience was the same with the small and scarce species, *Platypleura haglundi*, Stål. This rare Cicadad I heard in the Waterberg district of the Transvaal just before sundown, and without any difficulty located the tree from whence the stridulating music proceeded, when by a close scrutiny in the fading light I took a set of specimens from off the twigs and branches, to the colour of which they assimilate in colouration. I cannot conceive that my ears or eyes were superior to those of any insectivorous bird. That birds do thus capture Cicadas is vouched for by Mr. A. H. Swinton, who paid considerable attention to the family in Italy. "About the commencement of July there appeared, as if by magic, certain greyish insectivorous birds with a harsh and guttural note, among the sunny vines and woody knolls where the Cicadæ had established their coteries; and these, sitting on the low brambles, sometimes two together, knavishly whistled a tune until an unwary chanticleer was inveigled to respond, and so betray his hiding. The obnoxious intruders then flew at him, and brought him to the ground in their beak and claws, screaking most piteously, 'Whee! whee!'" ('Insect Variety,' p. 21). And that I am not alone in my experience of being assisted in the capture of Cicadidæ by discovering their position through their tell-tale stridulation is apparent by a narrative of the late Mr. Jenner Weir, who, exhibiting a specimen of *Cicadetta montana* at a meeting of the Entomological Society of London, is reported to have said, 'he was attracted to the spot where the insect was concealed by hearing it stridulate" (Proc. Ent. Soc. July 4th, 1877). At a subsequent meeting (Aug. 1st, 1877), Mr. Weir stated that Mr. J. Gulliver had also taken the species, and that that collector was also "guided by the sound so made in effecting the capture."—Ed.

Strange Pairing of Butterflies.—Whilst shooting on the western borders of the Bog of Allen, in Kildare, Ireland, during the latter part of the month of August in this present year, I noticed a male Small Tortoiseshell Butterfly and a female Large Meadow Brown, interbreeding. Is this a circumstance of any rarity? I almost think it must be, for in the course of a long country experience nothing of the sort has come under my notice.—A. Marmaduke Langdale (Thorneycroft, Compton, Petersfield).

[The two butterflies being not even generically allied, but belonging to different subfamilies, this strange union, of which we have received definite particulars, would certainly be infertile in result.—Ed.]

PRESERVATION OF ZOOLOGICAL SPECIMENS.

Dermestes lardarius eating Specimens of Moths.—In reply to Mr. Dallas's query about getting rid of *Dermestes* in insects (p. 433), the large moths are all the better for having their insides removed at the first, and treated with a weak solution of corrosive sublimate, or at least of benzoline. With old specimens, benzoline applied very lightly is most useful, but occasionally the mischief has extended to the wings, and the scales float off, leaving a black mass. In the case of heads, a solution of corrosive sublimate of such a strength as not to leave a white deposit on dark hair should be liberally applied, and when dry the hair should be brushed and combed, and wiped over with benzoline. Even when there are no *Dermestes*, it is a capital plan to saturate all heads once or twice a year with benzoline. For skins, &c., that are put away powdered naphthaline is excellent.—Oxley Grabham (Chestnut House, Heworth, York).

NOTICES OF NEW BOOKS.

Darwin, and after Darwin. Vol. iii. By the late GEORGE JOHN ROMANES, M.A., LL.D., F.R.S. Longmans, Green & Co.

THERE now exists almost a library of books which may be classified under the well-known term "Darwinism"; we have a terminology, used in representing the different views and theories, of a really turgid description; there has arisen a study in evolutionary polemics which bids fair in several cases to prove the whole work of some lives; and we might almost say—without intending offence—that dogmas have produced sectaries, and we hear of Lamarckians and Neo-Lamarckians, Neo- and Ultra-Darwinians; the apostles of Weismann and the disciples of Spencer. In fact, the study of Darwinism seems to have resulted in the evolution of a doctrinal literature that makes the reperusal of 'The Origin of Species' a matter of considerable importance, and of great refreshment to the wearied enquirer. In 1889 Mr. Wallace produced a brilliant volume which he entitled 'Darwinism,' and endeavoured to focus the new views which had arisen around the problem of the origin of species during the thirty years which had elapsed since Darwin published his memorable work. In this publication Mr. Wallace reaffirmed the theory, supporting it with new facts, but in a concluding chapter added some novel but incongruous views on the subject of "Darwinism applied to Man."

In 1892 Dr. Romanes published his first volume on 'Darwin, and after Darwin,' an exposition of the Darwinian theory, and a discussion of post-Darwinian questions. His lamented death occurred before the appearance of the second volume in 1895, which dealt with the questions of "Heredity and Utility," whilst the present and concluding section is devoted to the much-argued theses of "Isolation and Physiological Selection," with which the names of the Rev. J. S. Gulick and his own are so justly and indissolubly connected with papers severally communicated to the Linnean Society. To those who would study in an authoritatively condensed manner the principles of the theories of Isolation and Physiological Selection in the process of organic evolution, as more or less opposed to what may be perhaps styled the all-sufficiency of Natural Selection as held by Mr. Wallace, this volume must of course be recommended. The arguments are here, their acceptance must be left to the reader, but their bearings on modern evolutionary speculation cannot be ignored.

This volume, as was the case with the last, has received the able supervision, and in some chapters the selective discretion, of Prof. C. Lloyd Morgan, and a portrait of Gulick forms an excellent and interesting frontispiece. New terms seem inseparable from any new theory of the method of evolution or a restatement of an old one. We notice the creation of "apogamy" for separate breeding, and "homogamy" for segregate breeding.

A Hand-Book to the Birds of Great Britain. Vols. i.–iv. By R. Bowdler Sharpe, LL.D. Edwd. Lloyd, Limited.

Under the popular name of 'Lloyd's Natural History' there is a possibility of this high-class work on British Ornithology being somewhat overlooked. It is not a re-edited and enlarged volume of the old Jardine series, but a thoroughly new and standard work written by one of our best authorities, and as such bound to be freely consulted and widely used.* The many publications already existing on our native birds or those found in these islands make it imperative that new books on the subject do not necessitate unknown authors, while the information now required is that of an authoritative, condensed, and up-to-date character. Perhaps no work on British Zoology is to-day more difficult than the production of a new work on British Birds. The material for life-histories and habits is unlimited, but amidst these vast chronicles of avian existence great selective judgment is necessary, for all that are new may not ultimately prove true, nor are the true always new. In some books we wish that much might have been added, in others that much might have been omitted. Many field observations require to be canonised by repetition, whilst a habit or characteristic, resting on a record beyond question, may still prove to be but an individual occurrence based on a local circumstance. We cannot have too many of these records; they are generally valuable and always suggestive, but the task of sifting and arranging them, of focussing the important, and not altogether discarding the less prominent, requires a master-hand. Dr. Sharpe, in the opening sentence of his Preface, remarks:—"Every ornithologist who, in the course of his career, may be called upon to write a book upon British Birds, will always find this to be one of the most interesting, but certainly one of the most difficult tasks which he has ever undertaken. He is sure to discover that not only is the path well-worn, but that the work of his many predecessors has been so well done that little chance of originality remains to him." The rule may be true, but this work is certainly an exception to it.

---

* The first volume, which was then published by W. H. Allen & Co., was reviewed in this Journal, 1894, p. 468.

Our author commences with the Passeriformes, and places at their head the family Corvidæ, for which he gives his reasons.* The Accipitres are divided into two sub-orders—PANDIONES for the Ospreys; and FALCONES, which "includes every Accipitrine bird except the Ospreys and the Owls." Geese, Swans, and Ducks (ANSERIFORMES) precede the Herons, Storks, and Ibises (ARDEIFORMES). Cranes (GRUIFORMES) follow, and then the Bustards and Plovers (CHARADIFORMES), the Thick-knees being considered Bustard-like Plovers "and forming the connecting-link with the True Plovers." Gulls (LARIFORMES), which, "though at first sight very different in appearance from the Plovers, are really allied to them, "precede the Petrels (PROCELLARIIFORMES), which are followed by the Divers (COLYMBIFORMES), Grebes (PODICIPEDIDIFORMES), and the Rails (RALLIFORMES). The Pigeons (COLUMBIFORMES), the Sand Grouse (PTEROCLETES), and the Game-birds (GALLIFORMES) conclude the series.

A very thorough method is pursued throughout. The genus is shortly described by its principal structural characters, and its geographical distribution detailed. Each species is dealt with in sections, and is described under the stages of "Adult Male," "Adult Female," and "Young." Then we find its "Range in Great Britain," followed by what is much rarer in hand-books, its "Range outside the British Islands." This feature alone would make the book; it supplies a want long felt, and could not be contributed by a better authority. We do not say it has been unattempted before, but it is here detailed with a fulness and with a method that makes reference very easy, and will enlarge the horizon of many British collectors. "Habits" succeed the last section, and then follow "Nest" and "Eggs."

---

* *Vide* 'The Zoologist,' 1894, p. 470.

Dr. Sharpe in his "Nomenclature" is content to be original, and we share his belief that many opponents of his views on this subject "will be found adopting my nomenclature in the near future." Revolutionary as some corrections at first appear, especially the employment of identical generic and specific names, reasons, and, we think, good reasons, are given in the preface to the fourth volume, which will well repay perusal. In Fishes *Scomber scomber* has long been a well-used name for the common Mackerel, and though *Scomber scombrus* has been shown to be what Linnæus intended, the use of the incorrect term evidently did not occasion much disquiet to ichthyologists. *Thynnus thynnus* has also been used for the Tunny.

These volumes are published at a low price, and possess many coloured plates, which, if not in the highest form of art, are at least trustworthy references.

British Birds, with their Nests and Eggs. Illustrated by F. W. Frohawk. Vols. i., ii., iii. Hull: Brumby & Clarke, Lim.

There are some subjects which blossom perennially in literature, and whose interest is never exhausted. An example is afforded in British Zoology by Birds, which, by the number of their students, observers, and collectors, and the almost universal regard they inspire, have long incited the pencil of the artist and the pen of the naturalist, and volume follows volume on their story. In quite recent years we have had a new and revised edition of Yarrell; Seebohm's volumes devoted both to birds and their eggs; Howard Saunders's well-known and generally followed Manual; Lord Lilford's magnificent illustrations; Bowdler Sharpe's contribution to Lloyd's Natural History, not to mention works on the same subject by Hudson, Dixon, and others; and now there lie before us the first three handsome volumes of this new work, which is a marvel in cheapness, and a credit to the publishers.

The publication, which is to be completed in six volumes, has been entrusted to the authorship of some well-known ornithological writers, and Mr. Frohawk illustrates throughout, each bird being the subject of a full-page illustration, while the eggs are depicted in a series of coloured plates.

Volumes i. and ii. and a portion of vol. iii. are devoted to the Passeres and Picariæ, and have been entrusted to the care of Dr. A. G. Butler, an aviculturist who has had much experience with the first group in captivity, and is therefore able to add original observations made under such conditions, as well as facts relating to nidification derived from a personal collection of nests and eggs. This contribution contains a special feature as to the treatment and food of the species in confinement, in this respect resembling a well-known volume by Bechstein. Dr. Butler has avoided the illustration of our casual visitors, or "Rare British Birds," which we think would have added to the completeness of the work. Many, especially of the smaller birds, may be more frequent visitors than generally supposed. Although we hear much of bird slaughter, such can seldom be laid to the charge of a real or capable ornithologist, and the gun of the collector is not so ubiquitous as sometimes described. Could such a scrutiny be maintained over the area of these islands as was and perhaps is still pursued in Heligoland, many more visitors, such as warblers and other of the smaller birds, might be noticed, if not secured. The keeper's gun is more to be feared than that of the ornithologist, but the first is seldom discharged at warblers, though, alas! too often at our decreasing Accipitres. Should the same restrictive method be pursued by the other authors throughout the work, a supplementary volume might be issued for the reception of "Strangers."

"Striges" and "Accipitres" have been dealt with by the Rev. Murray A. Matthew. We gladly quote his plea for the Barn Owl, than which "there is, perhaps, hardly any other bird that is so persecuted, and so ungratefully repaid. When they cannot find any other excuse, keepers will say they kill them because they are 'unlucky.' There is no bird more commonly found stuffed and distorted in a case in cottages and farm-houses throughout the land than this poor Owl, the writer has always made it his endeavour to plead for and protect. Then, too, there is the wretched fashion of turning the masks, wings, and tails of these birds into fire-screens, and the still more senseless decoration of ladies' hats with their soft and downy feathers."

The few Steganopodes fall to the care of Mr. Henry O. Forbes, with whose name we are glad to see associated that of Anna Forbes, whom we have not forgotten as the authoress of "Insulinde." Mr. Forbes, however, has but just commenced his share of the work, and in future volumes will deal with the Herodiones, Odontoglossæ, and Gaviæ.

Some of the drawings by Mr. Frohawk, with their backgrounds, are very successful, and possess a charm of their own. We might instance the plates of the Redwing, Dipper, and Osprey as examples.

John Hunter: Man of Science and Surgeon, 1728–1793. By STEPHEN PAGET. T. Fisher Unwin.

THAT John Hunter was a great surgeon requires no telling; that he was also a great teacher the names of some of his pupils amply testify—Astley Cooper, Abernethy, and Edward Jenner were among the number; that he was a great collector is proved by the fact that his museum has been calculated to have contained more than 13,000 specimens; and that he was at heart an ardent naturalist will be manifest to any reader of this book.

"John Hunter was the youngest son, and his mother spoiled him." So writes his biographer, but the second statement we greatly doubt. It appears to be based on the fact that "He would do nothing but what he liked, and neither liked to be taught reading nor writing nor any kind of learning, but rambling amongst the woods, braes, &c., looking after birds'-nests, comparing their eggs—number, size, marks, and other peculiarities." His mother, probably, instead of spoiling him by this independence, helped to mould his practice of seeing for himself in after life, and thus indirectly inculcated the habit of proof by experience, and not faith by books. His career was not one of all sunshine. "First came the years of waiting for practice, that rise from the river of Time like the lean kine in Pharaoh's dream

—poor and very ill-favoured and lean-fleshed, such as I never saw in all the land of Egypt for badness"; while to the people round Golden Square, where he pitched his camp, "he was a zealous student of the human body, who might or might not restore you to health, but would certainly wish to anatomize you if he failed."

From a perusal of some of his letters—of which there are many, perhaps too many, printed—we seem to have lost the great surgeon, and to be reading the queries of a Gilbert White and the requests of an omnivorous collector. "In his old age, full of suffering, overworked, and close to death, he was yet writing to Africa for swallows, ostrich-eggs, a camel, cuckoos, a young lion, everything respecting the bee tribe, chameleons, and any other beast or bird." There was something magnificent in the way he purchased for his collection; he simply spent all he had in acquisitions. Ordinary people will call this improvidence, but ordinary people do not form scientific collections or create museums. Nemesis, however, spares not the man of lofty ideal, and Hunter had his distressing thoughts. "He had saved no income for his wife and children, and he could not insure his life; his museum must be sold to keep them after he was dead, or, if not sold to Government, then brought under the hammer; and the greater part of his writings was still in manuscript." Angina tortured him during his last years, but he received the mercy of a sudden death.

Two of his expressions will well bear repetition. "Never ask me what I have said, or what I have written; but if you will ask me what my present opinions are, I will tell you." The other relates to an experience on the hedgehog by Jenner. "I think your solution is just; but why think? why not try the experiment?" Under the immortal fame of the great surgeon and anatomist lies buried a real and enthusiastic naturalist.

EDITORIAL GLEANINGS.

Through the courtesy of Mr. Basil W. Martin, we have received the 'Fifth Report of the Department of Agriculture of the Province of British Columbia,' 1895–96. Much of interest to the zoologist is found under the heading "Noxious Animals and Animal Pests." At present there appear to be the following sums paid as blood-money:—Panthers (Puma), *Felis concolor*, 7½ dollars; Wolves, *Canis occidentalis*, 2 dollars; Coyotes, *Canis latrans*, 1 dollar. From enquiries made by the Department it seems to be the unanimous opinion that the price put upon the heads of Coyotes should be raised. "In point of fact, instead of their numbers being diminished, they are increasing to an alarming extent, rendering sheep-rearing in the upper country out of the question; calves, pigs, and fowls are also carried off in numbers." Wolves, though troublesome in places, are neither so numerous nor so bold as Coyotes. Panthers are still numerous about the settlements on Vancouver Island, where their depredations on sheep and pigs are severely felt. On the mainland Panthers are comparatively scarce, a few under the name of mountain lions being in the Smilkameen. None are found on Hornby Island, and this absence probably applies to all the Gulf Islands. Wild horses continue to be a source of great loss to the cattle men of the upper country, on account of the damage they do to the ranges. It is greatly to be feared that, owing partly to the depredations of these useless beasts, the ranges of the Upper Fraser were left so bare at the beginning of winter that a great loss will occur amongst the cattle of that section. "Licences to shoot unbranded stallions may be issued by the Government Agent of the district, upon such terms and conditions as such Government Agent may indorse upon such licence."

We read that a great influx of Owls, principally Dusky Horned Owls, *Bubo virginianus saturatus*, to the settled districts of the islands and Lower Fraser occurred last winter (1895). This curious migration was considered due to the excessively and unusually early cold weather in November, which it is believed drove these birds out of their haunts to the northward. The presence of such a number of Owls was undeniably a source of great loss to poultry keepers. Not only fowls, but rabbits, game, and even cats, fell a prey to their rapacity. "It is quite possible that on an occasion of this kind the harm done was much greater than any good the Owls may have performed." The introduced Pheasants, *Phasanius torquatus*, have been very numerous on Vancouver Island and on some of the Gulf Islands, and complaints have reached the Department of the mischief wrought by them in grain and potato fields. Other farmers, and in places where Pheasants are most numerous, do not complain, some of them even speaking favourably of them.

THE Year Book of the United States Department of Agriculture, 1896, has also been received. As in Canada, bounties are paid for the destruction of noxious animals, and during the last twenty-five years 3,000,000 dollars have been thus expended. In some regions the losses on account of Wolves and Coyotes are so serious as to threaten the success of the Sheep industry. It was estimated in 1892 that in New Mexico, where the Sheep were valued at 4,556,000 dollars, such losses varied from 3 to 7 per cent.; in Nebraska the value of Sheep was about 2,000,000 dollars, while the losses amounted to 5 per cent., or 100,000 dollars; and sheepowners in Central Texas suffered losses on account of wild animals to the extent of 10 to 25 per cent. The larger animals are gradually becoming rare, particularly in the East; but it cannot be said that bounties have brought about the extermination of a single species in any State. Wolves are now almost extinct east of the Mississippi river, except in Florida and a few other States; but their present rarity is due rather to the settlement of the country than to the number killed for rewards.

Mr. F. E. L. Beal has studied the habits and food of the Blue Jay, *Cyanocitta cristata*, which seems to have hitherto enjoyed a somewhat undeserved bad character. The accusations of eating eggs and young birds are certainly not sustained, while in destroying insects the Jay undoubtedly does much good. "The Blue Jay gathers its fruit from nature's orchard and vineyard, not from man's; corn is the only vegetable food for which the farmer suffers any loss, and here the damage is small. In fact the examination of nearly 300 stomachs shows that the Blue Jay does far more good than harm."

Asparagus was introduced into America with the early settlers from Europe, and is credited with having been cultivated there for two hundred years before being troubled with insects. Now two beetles destroy the crop, both introduced from Europe—*Crioceris asparagi*, which arrived about 1856, and *C. duodecimpunctata*, whose presence was detected in 1881. Fortunately they have found enemies in the land of their adoption. *C. asparagi* receives the attention of the spotted ladybird, *Megilla maculata*, whose larvæ appear "to have no other occupation than that of devouring those of asparagus beetles." Two Hemipterons, *Podisus spinosus* and *Stiretrus anchorago*, also destroy the larval pests, and some species of wasps and small dragonflies do a similar service. Mr. F. H. Chittenden has contributed the memoir on this subject.

Mr. Ernest Seton Thompson has published in the October number of our American contemporary 'The Auk' a communication on "Directive Coloration of Birds." The main thesis is that birds when *sitting* are *protectively* coloured; and when *flying*, *directively*. To illustrate this point an example is taken from mammals. "The common jack rabbit when squatting under a sage-bush is simply a sage-grey lump without distinctive colour or form. Its colour in particular is wholly protective, and it is usually accident rather than sharpness of vision which betrays the creature as it squats. But the moment it springs it is wholly changed. It is difficult to realize that this is the same animal. It bounds away with erect ears, showing the black and white markings on their back and under side. The black nape is exposed, the tail is carried straight down, exposing its black upper part surrounded by a region of snowy white; its legs and belly show clear white, and everything that sees it is plainly notified that *this is a jack rabbit.* The coyote, the fox, the wolf, the badger, &c., realize that it is useless to follow; the cottontail, the jumping rat, the fawn, the prairie dog, &c., that it is needless to flee; the young jack rabbit, that this is its near relative, and the next jack rabbit that this may be its mate, And thus, though incidentally useful to other species at times, the sum total of all this clear labelling is vastly serviceable to the jack rabbit, and saves it much pains to escape from real or imaginary dangers."

Yet another theory on the method of evolution! Mr. Stuart Jenkins has sent us a pamphlet on the "Origin of Vertebrates," reprinted from the 'Medical Age,' and published at Detroit, Michigan. The author commences with an expression of sympathy with Lord Salisbury's well-known utterances at the Oxford meeting of the British Association, and a belief in the fact—never denied—"that Darwin has not said the last word in regard to evolution." He also fortifies his proposition with the equally well-known views of Huxley on non-fertility between hybrids. The new theory, which is of course inevitable, is "that the divergence of the vertebrates from the lower type was caused by the parasitic implantation of one organism of the ganglionic type upon another, the implanted organism giving rise to the cerebro-spinal nerve system and internal skeleton." The brochure evidently requires more study than we have been able to afford to render this proposition clear. We read that "utility has cut but an insignificant part in structural evolution, which has been brought about entirely by modifications of the cerebro-spinal parasite due to variation of nutrition." This theory of Parasitism we must own we fail to adequately understand, and therefore apologise for representing it by a perhaps obscure digest.

Mr. G. Lacy, writing to 'South Africa,' has endeavoured to make a calculation as to how many Elephants have been killed in South Africa by white men. From careful study he has made the following list of those who have killed a hundred or more, but of course there must be others that could be added.:—

H. Hartley	600
F. Green	500
J. Dunn	400
G. Wood	400
Jan Viljoen	400
Piet Jacobs	400
C. J. Anderson	350
M. Zwartz	300
J. Chapman	250
J. Cane	200
S. H. Edwards	200
F. C. Selous	200
W. C. Oswell	200
W. Finnaughty	200
H. Larsen	200
P. Zietsman	200
R. Benningfield	150
J. H. Wilson	150
W. C. Baldwin	100
Gordon Cumming	100
A. Ericksson	100
D. Hume	100
W. Jennings	100
T. Jennings	100
R. Lewis	100
H. Wahlberg	100
J. Lee	100
W. Hartley	100
T. Hartley	100
H. Ogle	100
J. Todd	100
H. Smuts	100
J. Gifford	100
H. Fynn	100
G. Shadwell	100
R. Dubois	100
G. A. Phillips	100
C. Van Royen	100

He also believes that quite a hundred have killed between 50 and 100—say 7000 Elephants; and if 5000 are added for men who have shot less than 50 each, we arrive at about 20,000 Elephants. Except in the last item, this is not so much mere guesswork as some might suppose, for, though bags, whether fur, feather, or fish, are always to be received with caution, yet the above is considered fairly accurate for one reason, that, except in the cases of Selous, Cumming, and Baldwin, they do not rest on the testimony of the men themselves. One Matabele hunter, who shall be nameless, told the writer that he had shot 400, when to his certain knowledge 40 would cover his bag. Cane, Ogle, and Fynn date back to 1825–35, and Hume to 1830–40, but all the rest from 1850 to 1880, when Elephant hunting was practically over as a business. Mr. Lacy doubts if any one man has killed a hundred since that date, though perhaps numbers make the claim.

We heartily welcome the first number—published this month—of Mr. Howard Saunders's second edition, revised, of his 'Illustrated Manual of British Birds.' Both book and author are sufficiently well known to require no further comment, and we hope to notice the whole work at the completion of its twentieth number.

Mr. Symington Grieve has written a "Supplementary Note on the Great Auk or Garefowl (*Alca impennis*, Linn.)." These notes, we read, are written up to 31st July, 1897. A summary of existing remains of this bird is given. Number of birds represented by the following remains:—

Skins	79 or 80
Skeletons (more or less complete)	23 or 24
Detached bones....................	850 or 861
Physiological preparations	2 or 3
Eggs	70 or 72

Five reproductions from photographs of preserved specimens of the Great Auk are given as plates. This pamphlet is reprinted from the 'Transactions of the Edinburgh Field Naturalists' and Microscopical Society,' and published by W. Blackwood & Sons, Edinburgh.

Mr. Reginald Heber Horne, Jun., writes in the 'Auk' on the subject of "Birds' Tongues in Pictures." He has satisfied himself "that from a distance of a few feet, with a strong opera-glass, a bird's tongue *cannot* be seen between the open mandibles when singing. In almost all drawings or paintings of singing birds one will find the elevated tongue shown clearly. The musical instrument of a bird is not its tongue, as almost everyone knows; the sounds and modifications are produced in the throat, and therefore why should the tongue be expected to show (except perhaps as a modulator)? To cut the tongue out of a picture of a singing bird detracts from it, and looks exceedingly strange, solely because we are used to seeing it so in likenesses, but not in life; but the portrait nevertheless becomes true to nature."

In this month's 'Entomologist's Monthly Magazine,' Mr. Edward Saunders concludes a series of papers entitled "Hints on collecting Aculeate Hymenoptera." The information given is, however, far more than the title conveys, and is, in fact, quite an unique account of the habits and times of appearance of these interesting insects, and based on personal experience and observation. It is a real contribution to the *Natural History* of Insects.

In September, Prof. Drechsel, of Leipzig, was seized with apoplexy whilst sitting at his working table at the Zoological Station of Naples, and, in spite of prompt assistance, died within twenty minutes of the moment of seizure. Prof. Drechsel was fifty-four years old, and was for some time Director of the Chemical Section of the Leipzig Physiological Institute. At the time of his death he was Professor of Physiological Chemistry at the

Berne University. He was distinguished for many important discoveries, and was engaged in the systematic study of the presence of iodine and bromine in marine animals, in the pursuance of which he had come to Naples, where the material needed was abundant and easy to obtain. On the 23rd his remains were interred in the English cemetery at Naples, the staff of the Zoological Station, many students, and visitors to Naples attending the funeral.

As a result of a lecture on Wolmer Forest by their President, Mr. T. Whitburn, the Guildford Natural History Society have decided to present a petition to the Commissioners of Woods and Forests, praying that Wolmer Forest may be reserved as a sanctuary for wild birds, in which they, their nests and eggs, may remain unmolested throughout the year; that it may not be let at any time for game preserving, or for any purpose inimical to bird life; and that it may remain in perpetuity as a national memorial to the greatest outdoor naturalist England has produced—Gilbert White, of Selborne. Such a recognition, it is said, would show that the admiration of Gilbert White in the nineteenth century was not verbiage merely, but that it took such a practical shape as to be of value to the naturalist and the English speaking race for all succeeding time. The Society have no desire to attempt to interfere with the use of the Forest by the War Office for the purpose of military manœuvres.

The local angling club at St. Ives (Hunts) two seasons ago placed some Barbel in the Great Ouse, with a view of acclimatising them to that river, where they had hitherto been unknown. The fish came from the Thames, and the experiment looks as though it had been successful, for several tiny Barbel about 3 in. or 4 in. in length have just been caught in a cast or bait net. The Barbel turned in were from 3 lb. to 6 lb. each, and they are evidently thriving and breeding in the river, which by some authorities is considered to be a very suitable water for them.

"Notes on Larval Cestode Parasites of Fishes" is the title of a memoir by Prof. Edwin Linton in a recent issue of the 'Proceedings of the United States National Museum.' The material on which these notes are based consists of collections in about six hundred bottles and vials referable for the larger part to entozoa of fish. The author well observes "that the finding of a larval cestode parasite encysted in the tissues of a fish is not always proof that the fish is a true intermediate host. This goes without saying when the host of the encysted parasite is a large Shark. Beneden invented the term *xenosite*, i.e. stranger, for this condition of parasitism." Eighteen parasites with their hosts are not only fully described, but illustrated by eight plates.

In the 'Essex Naturalist,' Mr. Wilfred Mark Webb concludes his contribution on the "Non-Marine Molluscs of Essex." This is an excellent addition to our county faunas, and the summarized tabulation is as follows:—

Class or Order.	Essex.			British Isles.	
	Living.	Fossil only.	Extinct in Britain.	Living.	Extinct.
Stylomatophora	60	7	2	85	3
Basomatophora	25	0	0	27	0
Prosbranchiata	13	2	1	14	1
Pelecypoda	12	0	3	14	3
Totals	110	9	6	140	7

The general classification is according to Lang's 'Text-book of Comparative Anatomy,' the families are those given by Fischer in his 'Manuel de Conchyliologie,' and the generic names used are those adopted by Pilsbry in his 'Guide to the Study of the Helices.'

Mr. Horatio R. Fillmer is the author, and Messrs. Betts & Sons, Lim., the publishers, of an unpretending brochure on 'Waxbills, Grassfinches, and Mannikins; a Hand-book for Beginners in Aviculture.' The author in his preface remarks:—"I should like to accentuate the fact that this is a hand-book for beginners. It does not pretend to contain much that is new, and experienced aviculturists will learn little or nothing from it. For this reason it treats more fully of the cheaper and commoner species, and rare birds are either unnoticed or dealt with very briefly." It will doubtless prove useful to the now fast increasing numbers of bird-lovers who with living specimens study the habits of their pets in captivity.

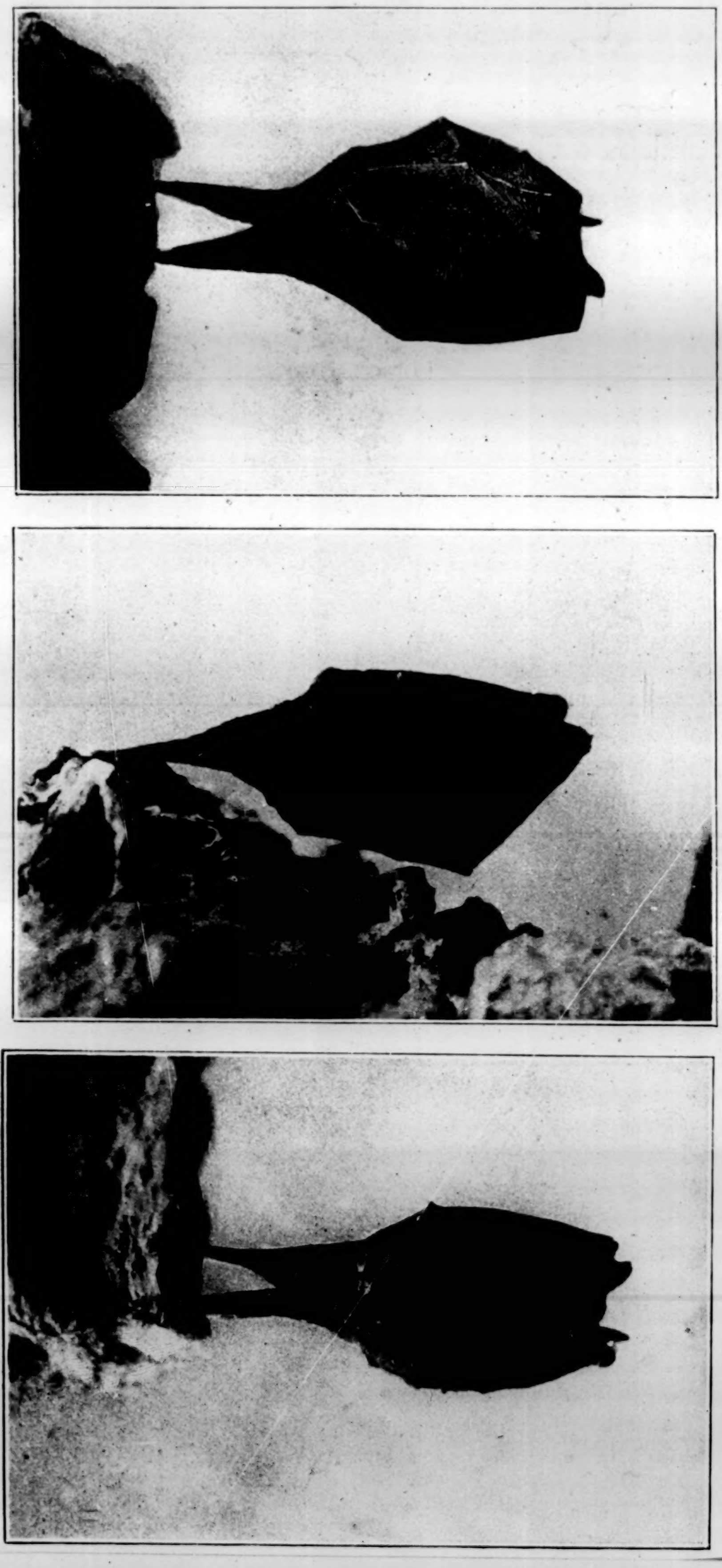
Mr. Elias Louis Hett, of Springfield, Brigg, has communicated with us on the subject of a proposed Dictionary of the Call-notes of British Birds. He writes:—"A short time ago I heard a bird-call which I did not recognize, beyond remembering that I had read of it a few days previously. I searched the volume without success, and the identity of the bird remained undecided. It then occurred to me that an alphabetical list of recorded bird-calls would prevent the recurrence of a similar experience. Acting on this idea, I have now collected from the works of Messrs. Bechstein, Dixon, Kearny, Morris, Robinson, Swann, and Dr. Emerson the call of two hundred birds, or rather more than half of those which are accepted as British. I am very desirous that my list should be as complete and perfect as possible, and shall greatly esteem any co-operation which you can give me; either in checking calls already recorded, or supplying those of other birds, more particularly of any bird or birds which you may have had favourable opportunities of observing.

"You will doubtless note that I have frequently retained two or more spellings of a single call. This appears to be unavoidable, as our language is not phonetic, and many bird-calls may be spelt in different ways with equal approximation to correctness. I have also retained some very free renderings of calls which approximate to English sentences. Although the *call-bird* portion is complete as far as I have the materials, I have as yet only had the first page set up. If my appeal for co-operation meets with the response for which I hope, I shall at once finish the compilation, and see it through the press."

BRITISH 18 DE 97 MUSEUM

BRITISH
18 DE 97
MUSEUM

Zoologist, December, 1897. Plate II.



RHINOLPHUS HIPPOSIDEROS, Bechst.